

Application No. 10/076,550
Reply to Official Action mailed on July 30, 2007

Amendments to the Specification

Paragraph [0025] - Please replace existing paragraph with amended paragraph below:

[0025] [currently amended] Using the constant gain dual mode front-end circuit depicted in Figure 1, output signal linearity at high RF input signal levels and a low noise figure at low RF input signal levels, are achieved by powering up or down of components disposed in either the first RF path or the second RF path. Powering down of electronic components disposed in either the first RF path or the second RF path provides for sufficient isolation, such that a majority of power in the RF input signal propagates in the path having at least an active element. As shown a control circuit 19A is electrically connected to the second mixer 19 allowing the selective powering down of the second RF path. The active element being either the mixer or the LNA, where active is meant to imply powered up and operating, other than inactive. The first mixer 14 is a high linearity device.

Paragraph [0027] - Please replace existing paragraph with amended paragraph below:

[0027] [currently amended] In a second embodiment, shown in Figure 3, a variable gain front-end tuner is shown, having a front end input port 10 and a front end output port 16. A first RF path 13 is disposed between the front end input port 10 and the front end output port 16, where within the first RF path 13 a first mixer circuit 14 is disposed. A second RF path 18 is also disposed between the front end input port 10 and the front end output port 16, in parallel with the first RF path 13. Where within the second RF path 18, in proximity of the front end input port 10 a low noise amplifier circuit (LNA) 17, in line with a variable attenuator circuit 41 and in line with a second mixer circuit 19, are disposed and coupled therein. The variable attenuator circuit 41 provides controllable attenuation to a portion of the RF input signal propagating along the second RF path 18 after amplification by the LNA 17. As discussed supra in respect of Fig. 2 a control circuit 31 is provided, monitoring the front end output port 16 via coupler 31A, and

Application. No. 10/076,550
Reply to Official Action mailed on July 30, 2007

determining which of the first mixer circuit 14 and second mixer circuit 19 to power down.

Paragraph [0028] - Please replace existing paragraph with amended paragraph below:

[0028] [currently amended] Figure 4 illustrates a variation of the second embodiment, where in this variation the front end input port 10 is coupled to a first RF coupler 11. The first RF coupler 11, having two output ports, a first output port 12 coupled to a first RF path 23, where the first RF path is further coupled to a second RF coupler 15, first input port 20, where within the first RF path 23 a first mixer circuit 14 is disposed. Also disposed on front end input port 10 is tap coupler 45A which provides a tapped portion of the input signal to a switch control circuit 45. The switch control circuit 45 being electrically connected to first RF coupler 11 and controlling this in dependence upon the tapped portion of the input signal. An output port 16 is provided on the second RF coupler 15 for providing an output signal to the front end output port 16. The second output port 22 of the first RF coupler 11 coupled to the second RF coupler 15, second input port 21 via a second RF path 28, in parallel with the first RF path 23. Where within the second RF path 28, in proximity of the front end input port 10 a low noise amplifier circuit (LNA) 17, in line with a variable attenuator circuit 41 and in line with a second mixer circuit 19, are disposed and coupled therein. The variable attenuator circuit 41 provides controllable attenuation to a portion of the RF input signal propagating along the second RF path 28 after amplification by the LNA 17. Typically, attenuating a signal prior to amplification decreases a signal to noise ratio of the signal and is therefore not advantageous. Alternatively first RF coupler 11 rather than being an electrically variable coupler may be replaced with an RF switch.

Paragraph [0029] - Please replace existing paragraph with amended paragraph below:

[0029] [currently amended] Figure 5 illustrates the front end tuner circuit shown in Figure 3, however a second attenuator circuit 50 is additionally disposed within the first

Application No. 10/076,550
Reply to Official Action mailed on July 30, 2007

radio frequency path, the second attenuator circuit having an input port coupled to the front end input port 10, and an output port coupled to the first mixer circuit 14 input port. The second variable attenuator circuit 50 for providing controllable attenuation to an input signal received at the input port, prior to providing a second attenuated signal to the first mixer circuit 14. Also disposed on the front end input port 10 is tap coupler 55A which provides a tapped portion of the input signal to a control circuit 55 which is electrically connected to both first mixer circuit 14 and second mixer circuit 19. The control circuit 55 thereby determining which of the first mixer circuit 14 and second mixer circuit 19 to power down.